

## CLAIMS

1. Use, in a gas production region, of a purified field gas G in which:
- a) at least a fraction G1 of said gas G is converted to obtain a stream of hydrogen ( $H_2$ );
  - b) a conventional fluid transportable crude oil P1 with a pour point of  $0^{\circ}C$  or less, comprising a vacuum residue with a sulphur content of more than 1% by weight, is selected and supplied via a unheated pipeline or unheated oil tanker;
  - c) said oil P1 is treated in a hydrocarbon treatment facility (I), carried out substantially without carbon discharge, the treatment comprising
    - at least one desulphurizing treatment step by hydrotreatment (HDT, RHDT) or hydroconversion (HDC, RHDC) or hydrocracking (HDK) of at least a fraction of the oil P1, said fraction mainly comprising compounds with a boiling point of more than  $343^{\circ}C$ , said step consuming at least a fraction of the stream  $H_2$ ;
    - at least one step, which may be communal with or separate to said desulphurizing treatment step, for reducing the quantity of vacuum residue included in the oil P1, by segregation of a part or the whole vacuum residue, optionally with conversion of a part of said vacuum residue, in which complete segregation of at least the asphaltenes of said vacuum residue is carried out;
- so as to produce:
- at least one pre-refined oil  $P_A$  comprising compounds derived from the desulphurizing treatment step, said pre-refined oil  $P_A$  being substantially free of asphaltenes, having a sulphur content that is reduced by at least 50% and a vacuum residue content with a sulphur content of more than 1% by weight which is zero or reduced by at least 15% with respect to the oil P1,

- and at least a segregated fraction comprising at least the major portion of the asphaltenes, optionally cracked and/or supplemented with other fractions from P<sub>1</sub>, in the form of a liquid heavy fuel, or a residual oil P<sub>B</sub> which is liquid at ambient temperature as an oil refinery feedstock intended to be refined in an oil refinery.

d) and said pre-refined oil P<sub>A</sub> is evacuated to an oil port as an oil refinery feedstock intended to be refined in an oil refinery which is distinct and distant from the facility (I).

2. Use of a gas according to claim 1, in which said segregated fraction is said residual oil P<sub>B</sub> which is liquid at ambient temperature as an oil refinery feedstock intended to be refined in an oil refinery, P<sub>B</sub> comprising at least five cuts from the group formed by: light naphtha, heavy naphtha, kerosene, gas oil, diesel, vacuum gas oil, vacuum residue, and comprising at least 3% of its total weight in at least 5 of said cuts.

3. Use of a gas according to one of claims 1 and 2, in which one of the two oils P<sub>A</sub>, P<sub>B</sub> differs from the other by at least 15% in at least one of the following parameters: the percentage by weight of kerosene, the percentage by weight of diesel, the percentage by weight of vacuum residue containing more than 1.25% by weight of sulphur.

4. Use of a gas according to one of claims 1 to 3, in which the oil fraction P<sub>A</sub> boiling above 343°C is a desulphurized fraction with a sulphur content of less than 1% by weight, derived from said desulphurizing treatment (HDC, HDT, HDK).

5. Use of a gas according to one of claims 1 to 4, in which said treatment comprise at least one catalytic step, carried out over a solid supported hydrotreatment, hydroconversion or hydroconversion catalyst, for at least a fraction of the feed comprising compounds with a boiling point of more than 371°C

6. Use of a gas according to one of claims 1 to 5, in which:

- at least an atmospheric distillate, a vacuum distillate and a vacuum residue are produced by atmospheric distillation and vacuum distillation of the oil P1;
  - at least a portion of said vacuum residue is deasphalted to obtain a deasphalted oil and asphalt;
  - 5      • said desulphurizing treatment (HDC, HDT, HDK) is carried out on the vacuum distillate and the deasphalted oil, separately or as a mixture, to obtain an effluent with a sulphur content of less than 1% by weight;
  - said pre-refined oil P<sub>A</sub> which is substantially free of asphaltenes and comprises no vacuum residue with a sulphur content of more than 1% by weight is reconstituted
  - 10      from at least a portion of the effluents from said desulphurizing treatment and at least a portion of the atmospheric distillate.
7.      Use of a gas according to one of claims 1 to 6, in which:
- at least an atmospheric distillate, a vacuum distillate and a vacuum residue are produced by atmospheric distillation and vacuum distillation of the oil P1;
  - 15      • at least a portion of said vacuum residue is deasphalted to obtain a deasphalted oil and asphalt;
  - a residual oil P<sub>B</sub> comprising at least the major portion of the asphalt obtained along with a limited quantity of relatively lighter fractions is produced so that the asphaltenes content of the vacuum residue of the oil P<sub>B</sub> is greater than that of the vacuum residue of the oil P1
  - 20      by at least 20%, said content preferably being greater than 12% by weight or even than 14% by weight.
8.      Use of a gas according to claim 7, in which said relatively lighter fractions are derived from the treatment of oil P1 and comprise a portion of the effluents from said desulphurizing treatment.
- 25      9.      Use of a gas according to claim 7, in which said relatively lighter fractions are principally composed of crude oil.

10. Use of a gas according to one of claims 1 to 6, in which:

- at least an atmospheric distillate, a vacuum distillate and a vacuum residue are produced by atmospheric distillation and vacuum distillation of the oil P<sub>1</sub>;
- the vacuum residue is converted by catalytic hydroconversion (RHDC), and one or more fractions from the oil P<sub>1</sub> is optionally added to the effluents from said catalytic hydroconversion to produce said residual oil P<sub>B</sub>.

11. Use of a gas according to one of claims 1 to 6, in which:

- at least an atmospheric distillate and an atmospheric residue is produced by atmospheric distillation of the oil P<sub>1</sub>;
- the atmospheric residue is converted by catalytic hydroconversion (RHDC);
- at least a portion of the effluents from said catalytic hydroconversion is fractionated into one or more non residual fractions to form the refined oil P<sub>A</sub> by mixing, after adding at least a portion of said atmospheric distillate, optionally desulphurized, and adding the complementary portion of the effluents from the treatment of the oil P<sub>1</sub> to produce the residual oil P<sub>B</sub>.

12. Use of a gas according to one of claims 1 to 11, in which no combustion nor gaseification nor evacuation of asphalt, nor coke forming process is carried out, and in which the liquid yield is over 97 % by weight.

13. Use of a gas according to one of claims 1 to 11, in which:

- at least an atmospheric distillate, a vacuum distillate and a vacuum residue is produced by atmospheric distillation and vacuum distillation of the oil P<sub>1</sub>;
- said residue is deasphalted to obtain a deasphalted oil and asphalt;
- said desulphurizing treatment (HDC, HDT, HDK) is carried out on the vacuum distillate and the deasphalted oil, used alone or as a mixture, to obtain an effluent having a sulphur content of less than 1% by weight;

- said pre-refined oil  $P_A$  which is substantially free of asphaltenes and comprises no vacuum residue with a sulphur content of more than 1% by weight is reconstituted from at least the major portion of the effluents from said desulphurizing treatment and from atmospheric distillation;
  - 5 • the major portion or, preferably, all of the asphalt, preferably fluxed, is burned as a fuel for facility (I) and/or for a power station and/or for a seawater desalination plant.
14. Use of a gas according to one of the preceding claims, in which at least a portion of the  $CO_2$  co-produced during conversion of the gas G1 to hydrogen is recovered and  
10 said  $CO_2$  is injected underground into the gas production region close to the facility (I).
15. Use of a gas according to claim 14, in which the  $CO_2$  is injected into an oil and/or gas field to sequestrate said  $CO_2$  and/or to carry out assisted oil recovery.
16. Use of a gas according to claim 6, in which the  $CO_2$  is injected into an oil field, for  
15 example a depleted field to carry out assisted oil recovery.
17. Pre-refined oil  $P_A$  produced by the gas use according to any one of claims 1 to 16.
18. Residual oil  $P_B$  produced by the gas use according to any one of claims 1 to 16.